

Notice of Allowability

Application No.

10/712,750

Examiner

William K Cheung

Applicant(s)

DONCK, JAN CYRIEL

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to IDS.
2. ☒ The allowed claim(s) is/are 1-10.
3. ☒ The drawings filed on 12 November 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 1112
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Allowances

1. Claims 1-10 are allowed.
2. The following is an examiner's statement of reasons for allowance:

As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the closest prior art of Hottovy et al. (US 6,262,191) and Boettcher et al. (US 4,153,774), individually or in combination, to render the present invention anticipated or obvious to one of ordinary skill in the art.

*The invention of claims 1-10 relates to a **tubular polymerization reactor apparatus** comprising:*

- (a) a **source of fresh monomer**;*
- (b) **first and second compressor stages** for compressing monomer;*
- (c) a **reactor tube**;*
- (d) **multiple feeds**, spaced lengthwise along the reactor tube for supplying monomer to the reactor;*

- (e) **multiple free-radical or catalyst injection positions** spaced lengthwise along the tubular reactor for causing monomer to be converted into polymer inside the tubular reactor;*
- (f) **separators for receiving a monomer-polymer mixture** from the reactor tube and separating said mixture into a volatile monomer-rich phase and molten polymerization phase;*
- (g) **conduits for recycling the monomer-rich phase** to the first and/or second compressor stages for recycling unreacted monomer to the reactor tube; and*
- (h) **a source of transfer agent** for modifying the molecular weight of the polymer for compression and feeding to the reactor tube; wherein compressor means is provided for compressing a transfer agent rich stream separately from a transfer agent-poor monomer stream and means is provided for feeding the compressed transfer agent rich stream to a polymerization reaction zone upstream of at least one reaction zone receiving the transfer agent-poor stream.*

The closest prior art Hottovy et al. (abstract and Figure) a polymerization process conducted with a tubular reactor apparatus. The apparatus comprises a source of fresh monomer (col. 4, line 29), first and second compressor stages for comprising monomer (col. 4, line 9-20), and separators for receiving a monomer-polymer mixture from the reactor tube (col. 3, line 45 to col. 4, line 15) and conduits for recycling the monomer-rich phase to the first and/or second compressor stages for recycling unreacted monomer to the reactor tube (col. 4, line 47-59). However, Hottovy et al. are silent on a tubular polymerization apparatus comprising a source of chain terminating transfer

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agent for modifying molecular weight. Hottovy et al. are also silent on an apparatus having multiple free-radical or catalyst injection positions spaced lengthwise along the tubular reactor. Therefore, it would not be apparent to one of ordinary skill in art to use the polymerization apparatus teachings of Hottovy et al. to obtain the inventive apparatus of claims 1-10. Although Boettcher et al. (col. 6, line 41-63) disclose a tubular reactor apparatus for handling propionaldehyde. However, Boethcher et al. are silent on an apparatus having multiple free-radical or catalyst injection positions spaced lengthwise along the tubular reactor. Therefore, it would not be apparent to one of ordinary skill in art to use the apparatus teachings of Boethcher et al. and Hottovy et al., individually or in combination, to obtain the inventive apparatus of claims 1-10. Claims 1-10 are allowed.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, and to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



William K. Cheung

Patent Examiner

April 14, 2004